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## INFORMATION REPORT

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PREPARED AND DISSEMINATED BY

CENTRAL INTELLIGENCE AGENCY

COUNTRY

Italy

SUBJECT

Details of the 220 KV Transmission Line  
across the Strait of Messina

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REPORT NO

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17 JUN 55 25X1A

NO. OF PAGES

2

NO. OF ENCLS.

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1. A 220 KV overhead line was studied in order to transfer at first 80 thousand KVA at 150 KV to be later brought up to 115 thousand KVA at 220 KV across the Strait of Messina. However, before construction was started, there was some discussion about the economical convenience of transferring hydroelectric power from the mainland rather than developing new thermo-electric power stations in Sicily, and the project was held up. No final decision has as yet (1950) been reached.
2. At its narrowest point the span from Italy to Sicily is a little over two miles; and in order not to interfere with navigation the wires must be kept at least 220 feet above the sea. A cable cannot be laid on account of a very strong and swift undersea current, reversing its direction twice a day, and, on account of the fact that the volcanic and rocky bottom of the sea would cause any kind of cable to wear out very soon. At wider places the force of the current diminishes and the sea-bottom is better, but the cable would have to have a length that makes its use impractical.
3. A first design had been worked out in 1921, to transfer, by means of six steel cables, 50 thousand KVA at 135 KV over a span of 10,350 feet. Twelve steel towers, to be braced to the ground right on the sea shore, 915 feet high and 370 feet apart the one from another, had been proposed.
4. In 1946 the old design was completely changed. Two steel frame towers, self-supporting, located a little farther away and higher up on the coast, are now proposed. This increases the span to 11,500 feet, but the height of the towers has been cut down to 610 feet. The power is to be transported across the span by means of three steel cables, horizontally aligned, 82 feet apart from one another.
5. After a careful study, it has been established that there is practically no danger of the wires hitting each other with a wind blowing at 95 miles an hour. The steel cables, about one inch overall diameter, and consisting of 12 strands each of seven steel wires of about .085 inches diameter, have a total cross section of 0.47 square inches and are intended to carry a current of three hundred amps. The cable is held under a constant tensile stress of 11,400 pounds per square inch (80 kg/mm<sup>2</sup>), by means of rollers and counterweights.

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Under temperature changes from 0°C up to 60°C, and wind blowing up to 95 miles an hour, the excursion of the counterweights may reach 66 feet. The cable would break at twice the stress given above. Weight of cable is 1.8 pounds per foot.

6. There are no ground wires and, as far as I know, nothing has been provided for protecting the lines from overvoltages. In fact there is no protection at all, in general, on Italian transmission lines, and notwithstanding, there is very little trouble with lightning.

- end -

*power plant**35-45.1**148 Italy**180 - 33.1 Italy*

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